

REMARKS**Summary of the Office Action**

Claims 1, 11 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Masaki (JP 10-153788) in view of Whetten (US 5,153,754).

Claims 1, 11, and 20 are objected to for minor informalities.

Summary of the Response to the Office Action

Applicants have amended claim 1 to further define the invention,. Accordingly, claims 1-21 are pending for reconsideration.

Objection to the Claims

Claims 1, 11, and 20 are objected to for minor informalities. Specifically, the Office Action alleges that although claim 1 recites a wire coated with Ti along at least one side and coated with titanium oxide along at least three sides, claim 1 fails to clarify how many sides the wire has. Applicants respectfully disagree with the Office Action's allegations.

Independent claim 1, as amended, recites a wire comprising a Cu (copper) layer "contacted along at least one surface by a first coating film made of titanium and contacted along at least three surfaces by a second coating film made of titanium oxide." Accordingly, Applicants respectfully assert that the wire, as recited by amended independent claim 1, inherently includes at least two end surfaces (i.e., beginning and end surface portions), as well as four side surfaces (i.e., top/bottom surfaces and left/right surfaces). Accordingly, the claimed recitation of "a Cu (copper) layer contacted along at least one surface by a first coating film made of titanium and contacted along at least three surfaces by a second coating film made of titanium oxide" is accurate and correct since the wire inherently has at least six side surfaces.

In response to the Office Action's allegations that "the sides of the gate electrode in a TFT normally do not include any end portions that need protection coating(s)," Applicants respectfully submit that the prior art of record fails to support any such an allegation and is not relevant to the features recited by independent claim 1, as amended.

Thus, Applicants respectfully assert that claiming how many sides/surfaces the wire has is not necessary in order for one of ordinary skill in the art to understand the claimed invention. Therefore, Applicants respectfully request that the objection be withdrawn.

All Claims Define Allowable Subject Matter

Claims 1, 11 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Masaki (JP 10-153788) in view of Whetten (US 5,153,754). Applicants respectfully traverse the rejection as being based upon a reference that neither teaches nor suggests the novel combination of features recites in independent claim 1, and hence dependent claims 11 and 20.

As disclosed in Applicants' specification, a wire resistance influences signal transmission delay. In order to solve the problem of signal delay, the related art uses a wire commonly formed of copper, which has a resistance lower than a resistance of an alloy film. However, copper layers easily effected by chemical used to form the copper layers. Thus, if a copper material is used as a material with which to make wires in an LCD display device, then the copper wires may become damaged during etching of the copper material, thereby causing electrical open circuits.

In contrast to the Applicants' related art, an object of Applicant's invention is to prevent damage to copper wires in an LCD display device by using a copper layer having coating films made of titanium and titanium oxide to surround the copper layer. Furthermore, in contrast to Applicant's claimed invention, Masaki et al. teaches using an alloy film as a main metal of a

wire whose electrical resistance is greater than a copper layer. Thus, Applicants respectfully assert that neither Masaki nor Whetten, whether taken singly or combined, teach or suggest the features of independent claim 1, and hence dependent claims 11 and 20.

In further contrast to the Applicants' claimed invention, Masaki et al. apparently teaches (paragraph [0026]) the disadvantages of providing an alloy film 32 having a TiOx film 33a and TiNx film 35, wherein a crack 34 may be formed due to stress generated between the alloy film 32 and the underlying glass substrate 31. Accordingly, Applicants respectfully assert that Masaki et al. actually teaches the unsatisfactory effects of forming different materials on an alloy film. Thus, Applicants respectfully assert that combining the teachings of Masaki et al. and Whetten would actually result in the undesirable formation of stress between the alloy film and the underlying substrate, thereby forming cracks in the electrically insulating material.

CONCLUSION

In view of the foregoing, Applicants respectfully request entry of the amendments to place the application in clear condition for allowance or, in the alternative, in better form for appeal. Should the Examiner believe that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under

37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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